

Remarks

Upon entry of this paper, claims 58,60-67 and 69-118 are pending, with claims 72-74, 79 and 87-118 being presently withdrawn from consideration, and claims 59 and 68 being cancelled without prejudice or disclaimer.

No new matter is added by the amendments made herein.

Objections to the Drawings

In the Office Action, the Examiner objected that claim 59 relates to three different variants in which the circular cutting edge 30 of the piercing section is said to project either: a) further radially outwardly than the apex of the bead, or; b) project outwardly to the same extent, or; c) project this far outwardly. This objection is now moot since claim 59 has been cancelled.

In addition, the Examiner objected that claim 68 recites a variety of positions for the fastener section, i.e., the thread, in the element to which the present application relates, which are not shown in the drawings. Applicant has cancelled claim 68 without prejudice or disclaimer and, hence, the objection is moot.

Accordingly, it is respectfully submitted that the objections to the drawings raised in the Office Action have been overcome, and Applicant courteously solicits the Examiner to withdraw the objections.

Rejection of the Claims Based on Indefiniteness

In the Office Action, claims 58-71, 75-78 and 80-86 were rejected under 35 USC §112 as being indefinite for failing to distinctly claim the invention. Specifically, the phrases "ring-like" and "plate-like" were objected to because it would be unclear what is considered to be a ring or a plate. Applicant has amended all of the pending claims, including some of the withdrawn claims, where appropriate, to correct the language considered indefinite by the Examiner.

Further, claims 80-84 are amended to overcome the indefiniteness caused by the recitation of the ribs or noses, and claims 80-86 have been amended to consistently depend upon an appropriate claim.

Additionally, at the end of page 3 of the Office Action, it is suggested by the Examiner that claims 72-74 and 79 would read on the elected species if depending from appropriate ones of the pending claims under examination. Claims 72-74 and 79 have been amended to depend from appropriate ones of the pending claims under examination, as well as to definitely claim the invention. Accordingly, Applicant respectfully requests examination of claims 72-74 and 79 in any subsequent Action.

Applicant respectfully submits that the amendments made herein overcome the rejection of the claims based on indefiniteness, and respectfully requests withdrawal of the rejection.

Rejection of the Claim Based on Prior Art

In the Office Action, the Examiner has rejected claim 58 under 35 USC §103 as allegedly being unpatentable over Mueller, US Patent No. 6,125,524 in view of Persson, US Patent No. 3,571,903. Applicant respectfully traverses the rejection, as follows.

The Examiner's summary of Mueller seems generally correct, although the comment at the bottom of page 4 of the Office Action to the effect that Mueller discloses a hollow piercing section 216 is incorrect. The free end of the tubular barrel portion 216 of Mueller is not intended as a hollow piercing section, and would not actually be able to act as one. Even if it were possible to punch a hole in a piece of sheet metal by using the tubular barrel section 216 to pierce the sheet metal, the problem would be that the hole formed in the sheet metal would be significantly smaller in diameter than the projection or bead shown beneath the recess 228 in Fig. 16 of Mueller. This would mean that, on pressing the element further into the sheet metal part, the danger would be that the bead would be sheared away as would the other features of the shaft part closer towards the flange.

On page 5, from line 4 onwards, the Examiner states that Mueller does not disclose the piercing section and the ring recess. The Examiner evidently feels Persson discloses features which, when combined with Mueller, would lead to the presently-claimed invention. More specifically, the Examiner states, at the middle of page 5 of the Action, that "[a]t the time the invention was made, it would have been obvious for one of ordinary skill in the art to provide the functional element of Mueller in

the piercing section which includes a ring-like cutting edge between a cylindrical portion and a free end and also a U-shaped ring recess between the free end on the ring-like bead in order to facilitate the self-piercing of the functional element into the plate as discussed in Persson."

Persson relates to a self-piercing element, but actually in the form of a solid member which differs significantly from the hollow element of Mueller. The fact that the functional element as claimed in independent claim 58 is a nut element follows from the wording that it has a hollowing piercing section. This does not necessarily make it a nut element, but it is clear that claim 58 is directed to an element with a nut-type body. In this respect, Applicant respectfully directs the Examiner's attention to the fact that the functional elements to which the present invention relates may be provided with a thread before they are united with a sheet metal component, or may simply be hollow components which are subsequently provided with a thread, for example by the use of a so-called thread forming or thread cutting screw. In any event, the present invention is directed to a female element rather than to a male element as disclosed in Persson.

Upon review of Persson, it can be seen that the male element shown there has a region 18 which is said to have a diameter slightly larger than the cylindrical surface 16 at the free end of the stud member (see Col. 2, lines 40-43). In practice, this would be rather problematic because, as stated above, the hole pierced by the piercing end of the stud would have a smaller diameter than that of the cylindrical region 18 so that it is likely the cylindrical region 18 may be damaged during fitment of the male element.

In addition, an object of the present invention to provide a functional element which is particularly suited for the self-piercing introduction to a sheet metal part but which can also be used with a broad spectrum of sheet metal thicknesses without the functional element have a special design for each sheet metal thickness (see, specification, page 2, 2nd paragraph).

Persson discloses that, in the first embodiment, the elements of Figs. 1-6, the elements always used with a piece of sheet metal having a constant thickness, and there is no suggestion that the same element could be used with a variety of different sheet metal thicknesses. The embodiment of Figs. 7-9 show a thicker part; however, this is a casting, and the stud is introduced into the wall of the casting which has to be

prepared with a specially-formed conical aperture 55 to accommodate the stud, so there is no self-piercing action here.

The question is what motivation the person skilled in the art would have to combine the teachings of Mueller and Persson. Neither reference is concerned with providing one and the same element for use in a range of the better components having a range of thicknesses. Hence, the ordinary artisan would have had no motivation to combine these references in the manner suggested by the Examiner.

A person skilled in the art concerned with this problem does not actually find any teaching in either of these references which would help him/her. Furthermore, it seems a little strange for the person skilled in the art to try and combine features of nut fastenings with features of stud fastenings, because when the artisan is looking at nut fasteners, his/her attention would surely be directed towards nut fasteners, not stud fasteners.

Equally, Persson has been known since 1971 at the latest, and it must therefore be considered rather surprising that if, the combination with Mueller as asserted by the Examiner is obvious, why did Mueller not make it at the time of his invention? Moreover, a combination of the two references also would not lead to the additional feature of claim 58 in which the bead and the piercing section have substantially the same diameter.

Based on the foregoing amendments and remarks, Applicant respectfully urges that the present invention is patentable over the prior art, alone or in any combination, and respectfully requests reconsideration and withdrawal of the rejection of claim 58 under 35 USC §103 as being unpatentable over Mueller in view of Persson.

It is believed that all of the pending issues have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed. Finally, nothing in this reply should be construed as any intent to concede any issue with regard to any claim, except as specifically stated in this reply, and the amendment of any claim

does not necessarily signify concession of unpatentability of the claim prior to its amendment.

The Examiner is invited to direct any questions to the undersigned at the below-listed contact numbers.

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